



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

41-09-02

Log Event A

Borehole Information

Farm : <u>SX</u>	Tank : <u>SX-109</u>	Site Number : <u>299-W23-110</u>
N-Coord : <u>35,391</u>	W-Coord : <u>75,847</u>	TOC Elevation : <u>661.37</u>
Water Level, ft :	Date Drilled : <u>3/23/1962</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>75</u>	

Equipment Information

Logging System : <u>2</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>03/1995</u>	Calibration Reference : <u>GJPO-HAN-1</u>	

Logging Information

Log Run Number : <u>1</u>	Log Run Date : <u>6/9/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>46.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>6/9/1995</u>	Logging Engineer: <u>Dave Traub</u>
Start Depth, ft.: <u>73.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>45.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Borehole

41-09-02**Log Event A**

Analysis Information

Analyst : P.D. HenwoodData Processing Reference : Data Analysis Manual Ver. 1Analysis Date : 10/18/1995**Analysis Notes :**

This borehole was logged in two runs. The pre- and post-survey field verification spectra showed consistent activities, indicating the logging system operated properly during data collection. Energy calibrations differed because of gain drift in the instrumentation. Gain drifts during data collection necessitated energy versus channel number recalibrations during processing of the data to maintain proper peak identification. A depth overlap occurred from 45.5 to 46.5 ft, and the data repeatability was very good for all radionuclides.

The casing thickness was 1/4 (0.25) inches, for which a correction factor was applied. No other corrections, such as for fluid, were made to the log data.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank SX-109.

Log Plot Notes:

Four log plots are provided. The Cs-137 and Eu-154 concentrations are provided in separate log plots to document the relative concentrations and shapes of the distribution. A plot of naturally occurring radionuclides (K-40, U-238, and Th-232) is also provided, which can be used for lithology interpretation. A combination plot includes logs of Cs-137, natural gamma, total gamma derived from the spectral data, and the latest available data from the WHC Tank Farms gross gamma logging. The energy peaks from which the radionuclide concentrations were derived are included in the headings for the Cs-137 and natural gamma plots.

A log scale was selected for the Cs-137 log in order to emphasize the maximum peak intensities. The Eu-154 log, natural gamma logs, total gamma, and gross gamma logs are plotted on a linear scale. The total gamma and gross gamma logs were plotted in order to emphasize the lithology changes near the bottom of the borehole. The maximum counts per second (cps) recorded for the total gamma and gross gamma logs in the zone of elevated gamma activity were 1120 and 216 cps, respectively.

The statistical uncertainty in a measurement is represented by uncertainty bars on the log plots where appropriate. This uncertainty is reported at the 95-percent confidence interval. The minimum detectable activity (MDA) is represented as an open circle on the plots. The MDA of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible. If the reported concentration is slightly above the MDA, the 95-percent confidence interval may extend below the MDA value and detection is not assured with 95-percent certainty.

The Tank Farms gross gamma plot is the latest available from WHC. With the exception of scale changes, no attempt has been made to adjust the log for depth discrepancies or other potential problems.